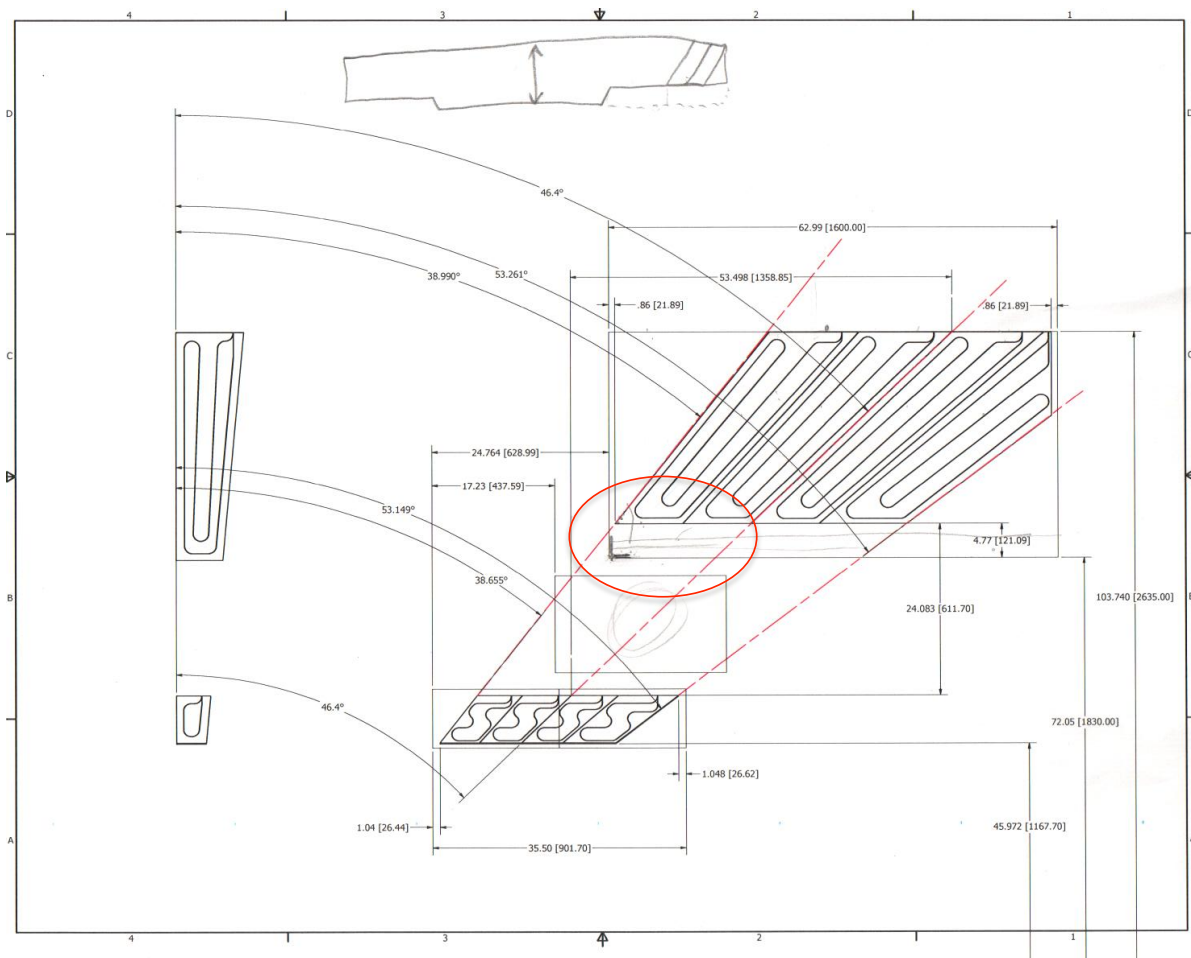


# HCal Prototype 2 Planning



Megan Connors  
HCal Meeting  
October 5, 2016

# T-1044 Meeting

- The following slides are mix of John Haggerty's slides from:
  - <https://indico.bnl.gov/conferenceDisplay.py?confId=2423>
- Plus my own questions for an Hcal focused discussion
- Where do we need man, woman, student, expert power?

# What

- High rapidity Inner and Outer HCAL (4x4)
- High rapidity 2D projective EMCAL (8x8)
- T-1044-2016a EMCAL (8x8)
- HBD digitizers
  - Same 192 channels as last time
  - sphenixdaq/FE3/JSEB
- “New digitizers”
  - 128 channels plus spare
  - va096/DCM II/JSEB II
- Tile mapper
- Oleg's hodoscope
- Veto counters
- Trigger S1•S2•S3

2019.09.29

# When

- Ship during week of Jan 9
  - Do not arrive Fri Jan 13
  - Mon Jan 16 is MLK holiday
- Wed Jan 18 is installation day
- Thu Jan 19 ORC
- Fri Jan 20 Inaugural run
- Tues Feb 21 uninstall
- Thu Feb 23 or Mon Feb 27 ship it back

# MWPC

- Martin has investigated triggering, and it should be possible, but we have to set some time aside to set up the timing relative to the ADC's
- I have in mind a few changes to the “Boosy box” that should make this easier to accomplish (and I think is likely to eliminate the DAQ hang)
- We'll have to survey the detectors better, at least we can get a Fluke 424 laser rangefinder, or someone might want to experiment with a visual fiducial system like this:  
<https://april.eecs.umich.edu/wiki/AprilTags>
- We need to have tracking software ready to use; there's no point in taking data with it unless and until we can extrapolate a track to the hodoscope and get the right finger
- Martin has data now in the format he plans to record it to test this

## First go at a run plan

- Week 1 Jan 18-25
  - Install, ORC, establish trigger and timing, verify instrumentation (Cerenkov, hodoscope, veto counters), MWPC, take first data with all calorimeters, PbGl, begin fine scan of EMCAL I on 2c table with HBD electronics
- Week 2 Jan 25- Feb 1
  - Fine scan/calibration of EMCAL II with new electronics on 2c table
- Week 3 Feb 1-Feb 8 (pre-Quark Matter)
  - Move EMCAL II in front of HCAL for combined running
- Week 4 Feb 8-15 (Quark Matter)
- Week 5 Feb 15-22
  - Final data set

## Thoughts and concerns

- I'll try and intersperse physics and LED and/or cosmic triggers
- We need some drawings showing the calorimeters in the enclosure; we reuse the railroad?
- Do we want to tilt the HCAL at all?
- Need to have better control the geometry (markings on the calorimeters, pre-planned positions and orientations)
- Should we plan to run the whole test with the new digitizers?
- Do we have the gains set right?
- Should we plan to daisy-chain the power in the two racks in the counting house and the two racks in the enclosure?
- It would be nice to make the move from the 2c table to the HCAL a little easier
- He pipes
- Are we running 12 hour days or 24 hour days?

## HCAL detector preparation

- HCAL times will arrive in the next few weeks according to Edward
- Cosmic test the tiles
- SiPM boards for HCAL? Reuse HCAL I?
- Cable length for outer HCAL... bury the tiles?
- Start inserting tiles in steel by Nov 1
- Complete operational detectors by Dec 1
- New preamps; same controller (except for firmware mods for LED pulser)

# Tile Testing of New Tiles

- Tile Testing from last prototype:
  - By eye survey at BNL
  - Thickness measurements at BNL
  - Mapping at Colorado
  - Cosmic testing at BNL
    - All tiles with same set of 5 SiPMs



# Previous Prototype Tiles

- Are there additional test to do?
- Reusing the SiPMs?
- Should we unwrap the tiles or check anything else?
- Calibration questions?

## Software

- A few more monitoring plots
  - Cerenkov counters
  - Hodoscope
  - EMCAL event display
  - Raw total energy
  - Timing
- I don't see any reason to change our basic workflow
  - rcdaq
  - Copy data to rcf immediately
  - Monitoring
  - Quick look at prdf's using whatever you like
  - DST production at BNL

# Simulation Status

- See today's slides by Chris

## Arrangements

- Eric updated the Wiki with some useful information
- On-site housing is tight (I'm wait-listed)
- Show your availability here:
  - <http://doodle.com/poll/2inumufgkdw8davz>
  - You can ask some of the people from last time, but I would suggest coming for 3-4 day stretches at a minimum
- Should someone look into scheduling a tour from QM?
- Make your Bien Trucha reservations

## What happens after this???

- This may be the last beam test of an HCAL
  - The HCAL sectors are too large for FTBF... maybe we could squeeze in the Inner, but the Outer is too long and heavy
  - Mechanical prototype could be at BNL in summer
- The next step for the EMCAL is a half-sector (8x48)
  - One more beam test

# 2016 Test Beam Paper

- Draft for expert feedback send via email by Ron Belmont
  - <https://wiki.bnl.gov/sPHENIX/images/e/eb/Beam-test-results.pdf>
- Please send comments by Monday Oct 10